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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,501	08/15/2001	Takanori Yamashita	DAIN:646	9600

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EXAMINER
KRUER, KEVIN R

ART UNIT	PAPER NUMBER
1773	5

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

MK-5

Office Action Summary	Application No.	Applicant(s)	
	09/913,501	YAMASHITA ET AL.	
	Examiner	Art Unit	
	Kevin R Kruer	1773	

-- The MAILING DATE of this communication appears on the c ver sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-76 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-76 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claim 4 is objected to because of the following informalities: the third line states "the an adhesive." Appropriate correction is required.

2. Claims 49 and 60 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. A "molten" resin film, by definition, is necessarily above the softening point of the resin forming said film. Otherwise, the film would not be molten.

3. Claims 48 and 59 recite the limitation "the adhesive resin layer" in the fourth line of the claims. There is insufficient antecedent basis for this limitation in the claim. Independent claims 43 and 54, respectively, do not claim an adhesive resin layer. For purposes of examination, claim 48 will be taken to depend from claim 44 and claim 59 will be understood to depend from claim 55.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 5,134,046) in view of Komai et al (US 6,238,783B1). Chow teaches a metallic

foil covering for a battery (abstract). The foil comprises a metallic foil, a thermoplastic adhesive film, (col 1, lines 65+) and an optional protective layer on the surface of the metal foil opposite the thermoplastic adhesive (col 2, lines 36+). The thermoplastic adhesive, herein relied upon to read on the claimed innermost layer, may comprise any thermoplastic resin which adheres to the metal foil and is heat sealable to the plastic battery housing (col 2, lines 5+). The metal foil may comprise copper, stainless steel, nickel (col 2, lines 12+), or aluminum (col 3, example 2).

Chow does not teach that the aluminum layer should be conversion coated prior to lamination. However, Komai teaches that there are several surface pretreatments that can be done to aluminum sheets in order to improve adhesion of a thermoplastic resin layer to the aluminum sheet (col 1, lines 40+). One such treatment is the chemical treatment of the aluminum sheet with a phosphate solution (col 1, lines 45+). Thus, it would have been obvious to one of ordinary skill in the art to phosphate coat the aluminum sheet of the laminate taught in Chow prior to the application of the protective layer and/ore adhesive layer in order to improve adhesion thereto.

5. Claims 2, 3, 5-8, and 50-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 5,134,046) in view of Komai et al (US 6,238,783B1), as applied to claims above, and further in view of Koike et al (US 4,664,994). Chow in view of Komai is relied upon as above, but neither reference teaches that the thermoplastic adhesive may comprise medium density polyethylene, LLDPE, or polypropylene. However, Koike teaches a jacket for a battery wherein the jacket comprises an inside contacting layer made of polyolefin (abstract). Polyolefins are

utilized because of their excellent heat-sealing properties and acid resistance (col 2, lines 44+). Suitable polyolefins include LLDPE, medium density polyethylene, and polypropylene (col 2, lines 55+). Thus, it would have been obvious to one of ordinary skill in the art to utilize any of LLDPE, medium density polyethylene or polypropylene as the thermoplastic adhesive taught in Chow because Koike teaches said polymers have been used equivalently in the battery jacket art as inner heat sealable layers of multi-layered battery jackets.

With regards to claim 2, the courts have held that the method of making the laminate does not differentiate the claimed laminate from the laminates rendered obvious by the prior art unless it can be shown that the method of making the laminate inherently results in a materially different product. The examiner considers the claims to be rendered obvious by the applied art because the laminate comprises the claimed layers comprising the claimed compositions.

6. Claims 1 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noh (US 6,242,131) in view of Komai et al (US 6,238,783). Noh teaches a battery jacket comprising at least three layers: an innermost hermetically sealing layer, an aluminum layer, and a nylon outermost layer (abstract). Furthermore, an adhesive layer may be applied between the innermost layer and aluminum layer or outermost layer and aluminum, respectively (col 3, lines 40+).

Noh does not teach that the aluminum layer should be conversion coated prior to lamination. However, Komai teaches that there are several surface pretreatments that can be done to aluminum sheets in order to improve adhesion of a thermoplastic resin

layer to the aluminum sheet (col 1, lines 40+). One such treatment is the chemical treatment of the aluminum sheet with a phosphate solution (col 1, lines 45+). Thus, it would have been obvious to one of ordinary skill in the art to phosphate coat the aluminum sheet of the laminate taught in Noh prior to the application of the protective layer and/ore adhesive layer in order to improve adhesion thereto.

7. Claims 2, 3, and 5-8, are rejected under 35 U.S.C. 103(a) as being unpatentable over Noh (US 6,242,131) in view of Komai et al (US 6,238,783), as applied to claims above, and further in view of Koike et al (US 4,664,994). Noh in view of Komai is relied upon as above, but neither reference teaches that the thermoplastic adhesive may comprise medium density polyethylene, LLDPE, or polypropylene. However, Koike teaches a jacket for a battery wherein the jacket comprises an inside contacting layer made of polyolefin (abstract). Polyolefins are utilized because of their excellent heat-sealing properties and acid resistance (col 2, lines 44+). Suitable polyolefins include LLDPE, medium density polyethylene, and polypropylene (col 2, lines 55+). Thus, it would have been obvious to one of ordinary skill in the art to utilize any of LLDPE, medium density polyethylene or polypropylene as the innermost hermetically sealing layer taught in Noh because Koike teaches said polymers have been used equivalently in the battery jacket art as inner heat sealable layers of multi-layered battery jackets.

With regards to claim 2, the courts have held that the method of making the laminate does not differentiate the claimed laminate from the laminates rendered obvious by the prior art unless it can be shown that the method of making the laminate inherently results in a materially different product. The examiner considers the claims to

be rendered obvious by the applied art because the laminate comprises the claimed layers comprising the claimed compositions.

8. Claims 1, and 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noh (US 6,242,131) in view of Komai et al (US 6,238,783), Koike et al (US 4,664,994), and Fitko et al (US 4,156,672). Noh teaches a battery jacket comprising at least three layers: a innermost hermetically sealing layer, an aluminum layer, and a nylon outermost layer (abstract). Furthermore, an adhesive layer may be applied between the innermost layer and aluminum layer or outermost layer and aluminum, respectively (col 3, lines 40+).

Noh does not teach that the aluminum layer should be conversion coated prior to lamination. However, Komai teaches that there are several surface pretreatments that can be done to aluminum sheets in order to improve adhesion of a thermoplastic resin layer to the aluminum sheet (col 1, lines 40+). One such treatment is the chemical treatment of the aluminum sheet with a phosphate solution (col 1, lines 45+). Thus, it would have been obvious to one of ordinary skill in the art to phosphate coat either or both sides of the aluminum sheet of the laminate taught in Noh prior to the application of the protective layer and/or adhesive layer in order to improve adhesion thereto.

Noh does not teach that the thermoplastic adhesive may comprise polypropylene. However, Koike teaches a jacket for a battery wherein the jacket comprises an inside contacting layer made of polyolefin (abstract). Polyolefins are utilized because of their excellent heat-sealing properties and acid resistance (col 2, lines 44+). Suitable polyolefins include polypropylene (col 2, lines 55+). Thus, it would

have been obvious to one of ordinary skill in the art to utilize polypropylene as the innermost hermetically sealing layer taught in Noh because Koike teaches polypropylene has been used equivalently in the battery jacket art as inner heat sealable layers of multi-layered battery jackets.

Noh also does not teach that the adhesive layer between the innermost layer and the adhesive layer may comprise acid-modified polypropylene. However, Fitko teaches that carboxyl modified polypropylene resins can be utilized as adhesion promoters for laminating propylene resin to aluminum foil (col 1, lines 27+). Thus, it would have been obvious to one of ordinary skill in the art to utilize carboxyl modified polypropylene as the adhesive layer between the polypropylene innermost layer and the aluminum foil layer because said composition is taught by Fitko to increase adhesion between propylene and aluminum.

With regards to claimed method limitations of the product claims, the courts have held that the method of making the laminate does not differentiate the claimed laminate from the laminates rendered obvious by the prior art unless it can be shown that the method of making the laminate inherently results in a materially different product. The examiner considers the claims to be rendered obvious by the applied art because the laminate comprises the claimed layers comprising the claimed compositions.

9. Claims 1, 9, and 15-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 5,134,046) in view of Komai et al (US 6,238,783B1), JP 8806781B (herein referred to as Mitsui), and Fitko (US 4,156,672). Chow teaches a metallic foil covering for a battery (abstract). The foil comprises a metallic foil, a

thermoplastic adhesive film, (col 1, lines 65+) and an optional protective layer on the surface of the metal foil opposite the thermoplastic adhesive (col 2, lines 36+). The thermoplastic adhesive, herein relied upon to read on the claimed innermost layer, may comprise any thermoplastic resin which adheres to the metal foil and is heat sealable to the plastic battery housing (col 2, lines 5+). The metal foil may comprise copper, stainless steel, nickel (col 2, lines 12+), or aluminum (col 3, example 2).

Chow does not teach that the aluminum layer should be conversion coated prior to lamination. However, Komai teaches that there are several surface pretreatments that can be done to aluminum sheets in order to improve adhesion of a thermoplastic resin layer to the aluminum sheet (col 1, lines 40+). One such treatment is the chemical treatment of the aluminum sheet with a phosphate solution (col 1, lines 45+). Thus, it would have been obvious to one of ordinary skill in the art to phosphate coat the aluminum sheet of the laminate taught in Chow prior to the application of the protective layer and/ore adhesive layer in order to improve adhesion thereto.

Chow also does not teach that the thermoplastic adhesive may comprise propylene-ethylene-butene terpolymer. However, Mitsui teaches an adhesive composition useful for improving adhesion between aluminum and polyolefins, such as the polyolefin utilized as the plastic battery housing. Said composition comprises a terpolymer of propylene-ethylene and butene (see abstract). The terpolymer comprises 0.1-10% ethylene and 1-30% butene. Thus, it would have been obvious to one of ordinary skill in the art to utilize the terpolymer as the thermoplastic layer taught in Chow

because Chow teaches any thermoplastic layer which adheres to the metal foil and is heat sealable to the plastic battery housing may be utilized, and the Mitsui.

Chow also does not teach that the adhesive layer between the innermost layer and the adhesive layer may comprise acid-modified polypropylene. However, Fitko teaches that carboxyl modified polypropylene resins can be utilized as adhesion promoters for laminating propylene resin to aluminum foil (col 1, lines 27+). Thus, it would have been obvious to one of ordinary skill in the art to utilize carboxyl modified polypropylene between the innermost layer and the aluminum foil layer of the laminate taught in Chow because said composition is taught by Fitko to increase adhesion between propylene and aluminum.

With regards to the product claims, the courts have held that the method of making the laminate does not differentiate the claimed laminate from the laminates rendered obvious by the prior art unless it can be shown that the method of making the laminate inherently results in a materially different product. The examiner considers the claims to be rendered obvious by the applied art because the laminate comprises the claimed layers comprising the claimed compositions.

10. Claims 1, 9, and 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 5,134,046) in view of Komai et al (US 6,238,783B1), Koike et al (US 4,664,994), and Aoyama et al (US 4,597,818). Chow teaches a metallic foil covering for a battery (abstract). The foil comprises a metallic foil, a thermoplastic adhesive film, (col 1, lines 65+) and an optional protective layer on the surface of the metal foil opposite the thermoplastic adhesive (col 2, lines 36+). The thermoplastic

adhesive, herein relied upon to read on the claimed innermost layer, may comprise any thermoplastic resin which adheres to the metal foil and is heat sealable to the plastic battery housing (col 2, lines 5+). The metal foil may comprise copper, stainless steel, nickel (col 2, lines 12+), or aluminum (col 3, example 2).

Chow does not teach that the aluminum layer should be conversion coated prior to lamination. However, Komai teaches that there are several surface pretreatments that can be done to aluminum sheets in order to improve adhesion of a thermoplastic resin layer to the aluminum sheet (col 1, lines 40+). One such treatment is the chemical treatment of the aluminum sheet with a phosphate solution (col 1, lines 45+). Thus, it would have been obvious to one of ordinary skill in the art to phosphate coat the aluminum sheet of the laminate taught in Chow prior to the application of the protective layer and/ore adhesive layer in order to improve adhesion thereto.

Chow does not teach that the thermoplastic adhesive may comprise polyethylene. However, Koike teaches a jacket for a battery wherein the jacket comprises an inside contacting layer made of polyolefin (abstract). Polyolefins are utilized because of their excellent heat-sealing properties and acid resistance (col 2, lines 44+). Suitable polyolefins include polyethylene (col 2, lines 55+). Thus, it would have been obvious to one of ordinary skill in the art to utilize polyethylene as the thermoplastic adhesive taught in Chow because Koike teaches said polymers have been used equivalently in the battery jacket art as inner heat sealable layers of multi-layered battery jackets.

Chow also does not teach that a tie layer may be present between said innermost layer and the aluminum foil. However, Aoyama teaches that an acid modified polyethylene may be utilized as an adhesive between polyethylene and aluminum (see example 4). Thus, it would have been obvious to one of ordinary skill in the art to utilize acid-modified polyethylene as a tie layer between the innermost layer and the aluminum foil taught in Chow in order to improve adhesion between said layers.

With regards to method limitations of the product claims, the courts have held that the method of making the laminate does not differentiate the claimed laminate from the laminates rendered obvious by the prior art unless it can be shown that the method of making the laminate inherently results in a materially different product. The examiner considers the claims to be rendered obvious by the applied art because the laminate comprises the claimed layers comprising the claimed compositions.

11. Claims 1, 9, 32-35, and 37-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 5,134,046) in view of Komai et al (US 6,238,783B1), JP 75037688B (herein referred to as Sanyo), and Fitko (US 4,156,672). Chow teaches a metallic foil covering for a battery (abstract). The foil comprises a metallic foil, a thermoplastic adhesive film, (col 1, lines 65+) and an optional protective layer on the surface of the metal foil opposite the thermoplastic adhesive (col 2, lines 36+). The thermoplastic adhesive, herein relied upon to read on the claimed innermost layer, may comprise any thermoplastic resin which adheres to the metal foil and is heat sealable to the plastic battery housing (col 2, lines 5+). The metal foil may comprise copper, stainless steel, nickel (col 2, lines 12+), or aluminum (col 3, example 2).

Chow does not teach that the aluminum layer should be conversion coated prior to lamination. However, Komai teaches that there are several surface pretreatments that can be done to aluminum sheets in order to improve adhesion of a thermoplastic resin layer to the aluminum sheet (col 1, lines 40+). One such treatment is the chemical treatment of the aluminum sheet with a phosphate solution (col 1, lines 45+). Thus, it would have been obvious to one of ordinary skill in the art to phosphate coat the aluminum sheet of the laminate taught in Chow prior to the application of the protective layer and/ore adhesive layer in order to improve adhesion thereto.

Chow also does not teach that the thermoplastic adhesive may comprise ethylene rich polypropylene. However, Sanyo teaches an adhesive agent for bonding polyolefin articles to metal surfaces (abstract). Said adhesive agent comprises propylene-ethylene copolymer having 2-15wt% ethylene. It would have been obvious to one of ordinary skill in the art to utilize the terpolymer as the thermoplastic layer taught in Chow because Chow teaches any thermoplastic layer which adheres to the metal foil and is heat sealable to the plastic battery.

Chow also does not teach that the adhesive layer between the innermost layer and the adhesive layer may comprise acid-modified polypropylene. However, Fitko teaches that carboxyl modified polypropylene resins can be utilized as adhesion promoters for laminating propylene resin to aluminum foil (col 1, lines 27+). Thus, it would have been obvious to one of ordinary skill in the art to utilize carboxyl modified polypropylene between the innermost layer and the aluminum foil layer of the laminate

taught in Chow because said composition is taught by Fitko to increase adhesion between propylene and aluminum.

With regards to the product claims, the courts have held that the method of making the laminate does not differentiate the claimed laminate from the laminates rendered obvious by the prior art unless it can be shown that the method of making the laminate inherently results in a materially different product. The examiner considers the claims to be rendered obvious by the applied art because the laminate comprises the claimed layers comprising the claimed compositions.

12. Claims 36 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 5,134,046) in view of Komai et al (US 6,238,783B1), JP 75037688B (herein referred to as Sanyo), and Fitko (US 4,156,672), as applied to claims 1, 9, 32-35 and 37-41 above, and further in view of Haruta et al (US 3,773,609). Chow in view of Komai, Sanyo, and Fitko as applied above, but does not teach that an antiblocking agent may be applied to the innermost layer. However, Haruta teaches that antiblocking agents may be added to heat sealable composition in order to improve their anti-block properties, and allows the film to be wound (col 6, lines 4+). Thus, it would have been obvious to one of ordinary skill in the art to add antiblocking agents to the innermost layer of the laminate taught by Chow in view of Komai, Sanyo, and Fitko in order to improve the laminate's antiblocking properties.

13. Claims 43, 49, 54, and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 5,134,046) in view of Komai et al (US 6,238,783B1), Fukuda et al (US 6,245,456), and Kiriazis (US 6,083,336). Chow teaches a metallic foil

covering for a battery (abstract). The foil comprises a metallic foil, a thermoplastic adhesive film, (col 1, lines 65+) and an optional protective layer on the surface of the metal foil opposite the thermoplastic adhesive (col 2, lines 36+). The thermoplastic adhesive, herein relied upon to read on the claimed innermost layer, may comprise any thermoplastic resin which adheres to the metal foil and is heat sealable to the plastic battery housing (col 2, lines 5+). The metal foil may comprise copper, stainless steel, nickel (col 2, lines 12+), or aluminum (col 3, example 2). The layers are laminated together (col 2, lines 36+).

Chow does not teach that the aluminum layer should be conversion coated prior to lamination. However, Komai teaches that there are several surface pretreatments that can be done to aluminum sheets in order to improve adhesion of a thermoplastic resin layer to the aluminum sheet (col 1, lines 40+). One such treatment is the chemical treatment of the aluminum sheet with a phosphate solution (col 1, lines 45+). Thus, it would have been obvious to one of ordinary skill in the art to phosphate coat the aluminum sheet of the laminate taught in Chow prior to the application of the protective layer and/ore adhesive layer in order to improve adhesion thereto.

Chow does not teach that the adhesive layer should be extruded as a molten film and applied to the aluminum layer. However, Fukuda teaches a battery sealing bag wherein the innermost layer is extrusion coated onto the aluminum foil (col 6, lines 27+). Thus, it would have been obvious to one of ordinary skill in the art to extrusion coat the adhesive layer to the aluminum layer because Fukuda teaches that extrusion coating of

adhesive layers of battery sealing bags may be extrusion coated onto the aluminum layer. Said method is functionally equivalent to the lamination method taught in Chow.

Chow does not teach that the adhesive layer should be ozone treated prior to application to the aluminum layer. However, Kiriazis teaches that the lamination of a polyolefin layer to an aluminum substrate. Kiriazis teaches that surface treatment of the olefin is preferably done in order to improve adhesion between said films. One such treatment is ozone treatment, which should be done immediately before lamination because its affects are reduced over the course of time (col 1, lines 38+). Thus, it would have been obvious to ozone treat the adhesive layer of the laminate taught in Chow immediately before its applied to the aluminum layer in order to improve adhesion between said layers.

With respect to claims 49 and 60, the examiner takes the position that the molten resin film is necessarily heated at a temperature not lower than the softening point of the resin forming the molten resin film. Otherwise, the film would not be extrudable.

14. Claims 57 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 5,134,046) in view of Komai et al (US 6,238,783B1), Fukuda et al (US 6,245,456), and Kiriazis (US 6,083,336), as applied to claims 43, 49, and 54 above, and further in view of Koike et al (US 4,664,994). The references are relied upon as above, but neither reference teaches that the thermoplastic adhesive may comprise medium density polyethylene, LLDPE, or polypropylene. However, Koike teaches a jacket for a battery wherein the jacket comprises an inside contacting layer made of polyolefin (abstract). Polyolefins are utilized because of their excellent heat-sealing

properties and acid resistance (col 2, lines 44+). Suitable polyolefins include LLDPE, medium density polyethylene, and polypropylene (col 2, lines 55+). Thus, it would have been obvious to one of ordinary skill in the art to utilize any of LLDPE, medium density polyethylene or polypropylene as the innermost hermetically sealing layer taught in Chow because Koike teaches said polymers have been used equivalently in the battery jacket art as inner heat sealable layers of multi-layered battery jackets.

15. Claims 44, 49, 55, 60, 61, and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 5,134,046) in view of Komai et al (US 6,238,783B1), Fitko et al (US 4,156,672), Ferment (US 5,650,243), and Kiriazis (US 6,083,336). Chow teaches a metallic foil covering for a battery (abstract). The foil comprises a metallic foil, a thermoplastic adhesive film, (col 1, lines 65+) and an optional protective layer on the surface of the metal foil opposite the thermoplastic adhesive (col 2, lines 36+). The thermoplastic adhesive, herein relied upon to read on the claimed innermost layer, may comprise any thermoplastic resin which adheres to the metal foil and is heat sealable to the plastic battery housing (col 2, lines 5+). The metal foil may comprise copper, stainless steel, nickel (col 2, lines 12+), or aluminum (col 3, example 2). The layers are laminated together (col 2, lines 36+).

Chow does not teach that the aluminum layer should be conversion coated prior to lamination. However, Komai teaches that there are several surface pretreatments that can be done to aluminum sheets in order to improve adhesion of a thermoplastic resin layer to the aluminum sheet (col 1, lines 40+). One such treatment is the chemical treatment of the aluminum sheet with a phosphate solution (col 1, lines 45+). Thus, it

would have been obvious to one of ordinary skill in the art to phosphate coat the aluminum sheet of the laminate taught in Chow prior to the application of the protective layer and/ore adhesive layer in order to improve adhesion thereto.

Chow does not teach that the adhesive layer should be extruded as a molten film and applied to the aluminum layer. However, Fukuda teaches a battery sealing bag wherein the innermost layer is extrusion coated onto the aluminum foil (col 6, lines 27+). Thus, it would have been obvious to one of ordinary skill in the art to extrusion coat the adhesive layer to the aluminum layer because Fukuda teaches that extrusion coating of adhesive layers of battery sealing bags may be extrusion coated onto the aluminum layer. Said method is functionally equivalent to the lamination method taught in Chow.

Chow also does not teach that the adhesive layer between the innermost layer and the adhesive layer may comprise acid-modified polypropylene. However, Fitko teaches that carboxyl modified polypropylene resins can be utilized as adhesion promoters for laminating propylene resin to aluminum foil (col 1, lines 27+). Thus, it would have been obvious to one of ordinary skill in the art to utilize carboxyl modified polypropylene between the innermost layer and the aluminum foil layer of the laminate taught in Chow because said composition is taught by Fitko to increase adhesion between propylene and aluminum.

Neither Fitko nor Chow teaches the innermost layer and the modified adhesive layer may be coextruded. However, Ferment teaches a multilayer polymeric battery package (abstract) wherein the layers may be coextruded (col 2, lines 7+). Thus, it would have been obvious to one of ordinary skill in the art to coextrude the modified

adhesive layer and the innermost layer because Ferment teaches that polymeric films in battery packagings may be coextruded, and coextrusion would minimize the steps required to make said laminate.

Chow does not teach that the adhesive layer should be ozone treated prior to application to the aluminum layer. However, Kiriazis teaches that the lamination of a polyolefin layer to an aluminum substrate. Kiriazis teaches that surface treatment of the olefin is preferably done in order to improve adhesion between said films. One such treatment is ozone treatment, which should be done immediately before lamination because its affects are reduced over the course of time (col 1, lines 38+). Thus, it would have been obvious to ozone treat the modified adhesive layer of the laminate taught by Chow in view of Fitko immediately before its applied to the aluminum layer in order to improve adhesion between said layers.

With regards to claims 49, 60, and 61, the examiner takes the position that the adhesive layer would have necessarily been heated to a temperature not lower than its softening point in order to obtain adhesion. The film would not exhibit adhesion unless heated above its softening point.

16. Claims 46, 47, 65, and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 5,134,046) in view of Komai et al (US 6,238,783B1), Fitko et al (US 4,156,672), Ferment (US 5,650,243), and Kiriazis (US 6,083,336), as applied to claims above, and further in view of Koike et al (US 4,664,994). The references are relied upon as above, but none teaches that the thermoplastic adhesive may comprise medium density polyethylene, LLDPE, or polypropylene. However, Koike

teaches a jacket for a battery wherein the jacket comprises an inside contacting layer made of polyolefin (abstract). Polyolefins are utilized because of their excellent heat-sealing properties and acid resistance (col 2, lines 44+). Suitable polyolefins include LLDPE, medium density polyethylene, and polypropylene (col 2, lines 55+). Thus, it would have been obvious to one of ordinary skill in the art to utilize any of LLDPE, medium density polyethylene or polypropylene as the innermost hermetically sealing layer taught in Chow because Koike teaches said polymers have been used equivalently in the battery jacket art as inner heat sealable layers of multi-layered battery jackets.

17. Claims 45 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 5,134,046) in view of Komai et al (US 6,238,783B1), Fitko et al (US 4,156,672), and Kiriazis (US 6,083,336). Chow teaches a metallic foil covering for a battery (abstract). The foil comprises a metallic foil, a thermoplastic adhesive film, (col 1, lines 65+) and an optional protective layer on the surface of the metal foil opposite the thermoplastic adhesive (col 2, lines 36+). The thermoplastic adhesive, herein relied upon to read on the claimed innermost layer, may comprise any thermoplastic resin which adheres to the metal foil and is heat sealable to the plastic battery housing (col 2, lines 5+). The metal foil may comprise copper, stainless steel, nickel (col 2, lines 12+), or aluminum (col 3, example 2). The layers are laminated together (col 2, lines 36+).

Chow does not teach that the aluminum layer should be conversion coated prior to lamination. However, Komai teaches that there are several surface pretreatments that can be done to aluminum sheets in order to improve adhesion of a thermoplastic

resin layer to the aluminum sheet (col 1, lines 40+). One such treatment is the chemical treatment of the aluminum sheet with a phosphate solution (col 1, lines 45+). Thus, it would have been obvious to one of ordinary skill in the art to phosphate coat the aluminum sheet of the laminate taught in Chow prior to the application of the protective layer and/ore adhesive layer in order to improve adhesion thereto.

Chow does not teach that the adhesive layer should be extruded as a molten film and applied to the aluminum layer. However, Fukuda teaches a battery sealing bag wherein the innermost layer is extrusion coated onto the aluminum foil (col 6, lines 27+). Thus, it would have been obvious to one of ordinary skill in the art to extrusion coat the adhesive layer to the aluminum layer because Fukuda teaches that extrusion coating of adhesive layers of battery sealing bags may be extrusion coated onto the aluminum layer. Said method is functionally equivalent to the lamination method taught in Chow.

Chow also does not teach that the adhesive layer between the innermost layer and the adhesive layer may comprise acid-modified polypropylene. However, Fitko teaches that carboxyl modified polypropylene resins can be utilized as adhesion promoters for laminating propylene resin to aluminum foil (col 1, lines 27+). Thus, it would have been obvious to one of ordinary skill in the art to utilize carboxyl modified polypropylene between the innermost layer and the aluminum foil layer of the laminate taught in Chow because said composition is taught by Fitko to increase adhesion between propylene and aluminum.

Chow does not teach that the adhesive layer should be ozone treated prior to application to the aluminum layer. However, Kiriazis teaches that the lamination of a

polyolefin layer to an aluminum substrate. Kiriazis teaches that surface treatment of the olefin is preferably done in order to improve adhesion between said films. One such treatment is ozone treatment, which should be done immediately before lamination because its affects are reduced over the course of time (col 1, lines 38+). Thus, it would have been obvious to ozone treat the modified adhesive layer of the laminate taught by Chow in view of Fitko immediately before its applied to the aluminum layer in order to improve adhesion between said layers.

18. Claims 63, 64, 67, and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 5,134,046) in view of Komai et al (US 6,238,783B1), Fitko et al (US 4,156,672), and Kiriazis (US 6,083,336), as applied to claims 45 and 56 above, and further in view of Koike et al (US 4,664,994). The references are relied upon as above, but none teaches that the thermoplastic adhesive may comprise polypropylene. However, Koike teaches a jacket for a battery wherein the jacket comprises an inside contacting layer made of polyolefin (abstract). Polyolefins are utilized because of their excellent heat-sealing properties and acid resistance (col 2, lines 44+). Suitable polyolefins include LLDPE, medium density polyethylene, and polypropylene (col 2, lines 55+). Thus, it would have been obvious to one of ordinary skill in the art to utilize polypropylene as the innermost hermetically sealing layer taught in Chow because Koike teaches said polymers have been used equivalently in the battery jacket art as inner heat sealable layers of multi-layered battery jackets.

NOTE: the examiner takes the position that the adhesive layer would have necessarily been heated to a temperature not lower than its softening point in order to

obtain adhesion. The film would not exhibit adhesion unless heated above its softening point.

19. Claims 66-76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (US 5,134,046) in view of Komai et al (US 6,238,783B1), Fitko et al (US 4,156,672), and Kiriazis (US 6,083,336), as applied to claims 45 and 56 above, and further in view of JP 75037688B (herein referred to as Sanyo). None of the references teaches that the thermoplastic adhesive may comprise ethylene rich polypropylene. However, Sanyo teaches an adhesive agent for bonding polyolefin articles to metal surfaces (abstract). Said adhesive agent comprises propylene-ethylene copolymer having 2-15wt% ethylene. It would have been obvious to one of ordinary skill in the art to utilize the terpolymer as the thermoplastic layer taught in Chow because Chow teaches any thermoplastic layer which adheres to the metal foil and is heat sealable to the plastic battery.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin R Kruer whose telephone number is 703-305-0025. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on 703-308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-5408 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

krk
May 5, 2003

Paul Thibodeau
Supervisory Patent Examiner
Technology Center 1700